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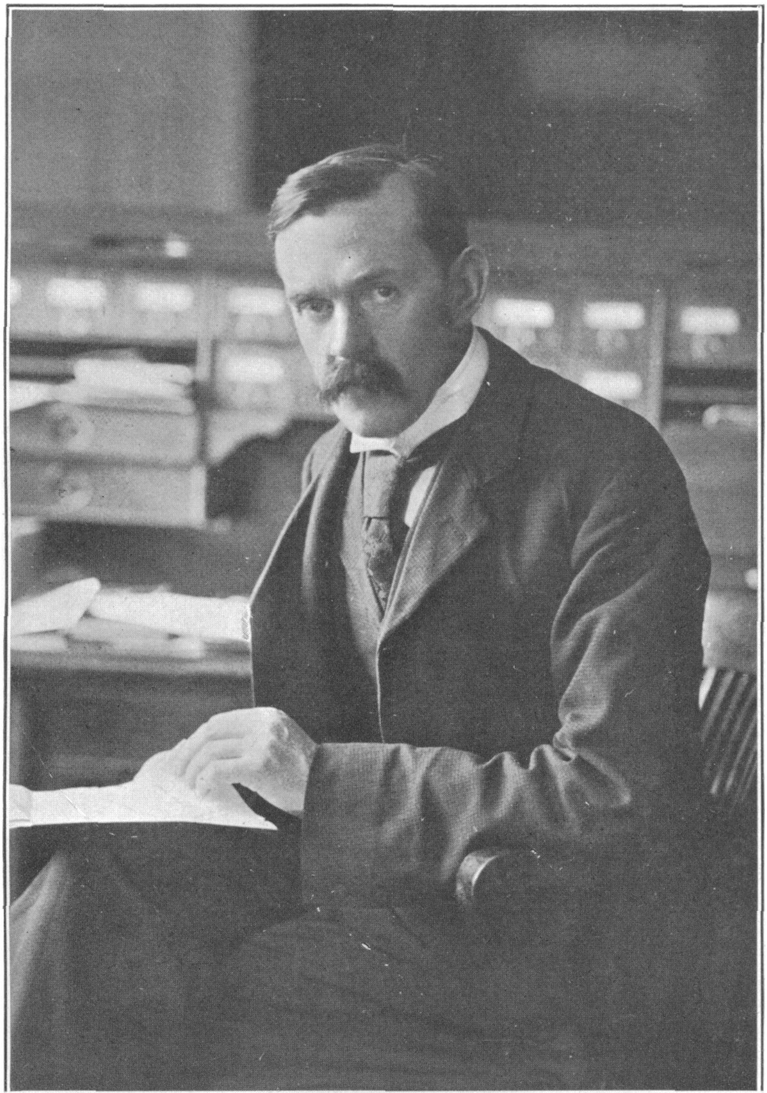
being not only the most prodigal nation in the expenditure of national resources, but of the lives of its citizens as well. Its leading place in the production of all the principal mineral substances was accompanied by a wanton loss of life and of health. In 1907 there was an unusual number of mine explosions, and the result was a general movement to take steps to prevent the needless loss of life. These culminated in the creation of the Bureau of Mines, in 1910, for the purpose of increasing health, safety, and efficiency in the mining industry. Dr. Holmes was appointed director and retained the position until his untimely death in 1915.

Starting the work at Pittsburgh placed it in the center of an important mining and metallurgical region. Though the work of the bureau was at first housed in temporary and unsuitable quarters, Dr. Holmes had a vision of a great experimental station for mining, where all kinds of accidents could be studied, and methods developed for their prevention, which miners and operators alike could feel was their station and could come to for information and education. It was also his conception that this station should help to stop the waste in mining resulting from the inefficient methods employed and the excessive competition in the coal industry. To this end he foresaw the need for research laboratories for chemical and physical investigation of gases, explosives and mineral substances, and equipment for the testing of mine lamps and other machinery, and finally, of the establishment by the bureau of such agencies as would result in the training in the use of rescue apparatus and in giving first aid to the injured. The fruition of Dr. Holmes's work is the experiment station which has now been dedicated.

THE BRITISH NATIONAL PHYSICAL LABORATORY AND SIR RICHARD GLAZEBROOK

As Dr. J. A. Holmes was mainly responsible for the establishment and development of the Bureau of Mines and Dr. S. W. Stratton is for the Bureau of Standards, so in England Sir Richard Glazebrook has been director of the National Physical Laboratory since its inception. He retired on September 18, his sixty-fifth birthday, and is succeeded by Professor J. E. Petavel, professor of engineering and director of the Whitworth Laboratory in the University of Manchester.

The London *Times* remarks that "Sir Richard Glazebrook has controlled the fortunes of the National Physical Laboratory from its small beginnings in 1899 to its present great place in the scientific organization of the nation. It was first intended merely to carry out investigations required in connection with the manufacture and testing of instruments of precision, and in 1902, when it was moved to new buildings at Teddington, it had only two departments and a staff of twenty-six. It has now seven scientific departments, a secretariat, and a staff of over 600 persons. These deal with heat, optics, acoustics and molecular physics, with electricity, metrology, engineering, metallurgy, the forms of ships and aerial machines, and aero-dynamics. It gives advice on all questions involving the physical properties of matter, the strength and quality of materials, gauges and standards. During the war it rendered invaluable service. In the financial year ending in March, 1918, the Ministry of Munitions alone paid it £42,000 for work done, and the expenditure was not on manufacture, but merely on examining and testing. Until last year the Royal Society was the



Sir Richard Glazebrook,

Retiring Director of the British National Physical Laboratory.

governing body of the laboratory, and conducted its affairs with the assistance of a general board of thirty-six members, of whom twelve were nominees of industrial and commercial institutions. But the financial responsibility was heavy and increasing, and from April 1, 1918, the Department of Scientific and Industrial Research took over the burden, but assumes only the control necessary for an accounting authority. The *Times* says " Sir Richard will hand over to his distinguished successor, Professor Petavel, not only an institution of great and growing usefulness, but a tradtion of harmonious cooperation between science and industry. He has provided the new Department of Scientific and Industrial Research with a working organization sufficient to justify their existence, and with a model on which we may suppose that their most successful creations, the Industrial Research Councils, have been formed."

SCIENTIFIC ITEMS

WE record with regret the death of Dr. Cyril Hopkins, head of the department of agronomy of the University of Illinois, and of Dr. August Hoch, formerly director of the Psychiatric Institute on Ward's Island, New York.

Dr. W. H. Herdman, professor of zoology in the University of Liverpool, who has been general secretary of the British Association for the Advancement of Science since 1903, has been elected president of the association.—The Willard Gibbs gold medal was presented on September 26 to Professor William A. Noyes, director of the department of chemistry at the University of Illinois, for special work in chemistry for the government performed during the war.

Mr. Arthur Balfour has been nominated for election as chancellor of Cambridge University, in succession to his brother-in-law, the late Lord Rayleigh.—William McDougall, reader in mental philosophy in Oxford University, has been elected professor of psychology at Harvard University to fill the chair vacant by the death of Hugo Münsterberg.—Mme. Curie has been appointed professor of radiology in the Warsaw University.

Professor Vito Volterra, who holds the chair of mathematical physics in the University of Rome and is a member of the Italian Senate, will deliver a series of Hitchcock lectures at the University of California from October 6 to 17. This will be the second series of Hitchcock lectures this semester, Professor W. J. V. Osterhout, of Harvard University, having just completed the first series on the general subject, " Fundamental life processes." Professor Volterra will lecture on " The propagation of electricity " and " Functional equations."